RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 3652

PATENT APPLICATION
Docket No.: 4591-374
Client Ref. No.: IH13086-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Kwang-Ho HAN, et al.		
Serial No.:	10/775,958	Examiner:	Herrera, Jennifer
Filed:	February 9, 2004	Group Art Unit:	3652
Confirmation No.:	1600		
For:	APPARATUS AND METHOD FOR POSITIONING SEMICONDUCTOR SUBSTRATE		

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Commissioner for Patents
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

This review is requested for the reason(s) states on the attached sheet(s). Note: no more than five (5) pages may be provided.

I am the:

- ☐ applicant/inventor
- ☐ assignee of record of the entire interest
  see 37 CFR 3.71 (statement under 37 CFR 3.73(b) is enclosed)
- ☒ attorney or agent of record
- ☐ attorney or agent acting under 37 CFR 1.34

Total of (1) form(s) is/are submitted.

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Respectfully submitted,
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ARGUMENTS IN SUPPORT OF PRE-APPEAL BRIEF CONFERENCE

Independent claims 1 and 18 stand rejected under §103(a) in view of a combination of three references: Shin, Horr and Morgan. The combined teaching of these three references, however, miss critical features of the wafer alignment tool claimed in the present invention.

The main argument presented in this pre-appeal brief is as follows:

> Horr moves a wafer support by vertically moving the wafer using individually actuated lift pins. Horr does not move a plurality of guide blocks *collectively* and *radially* as set forth in claims 1 and 18. Because Horr fails to teach elements within the claims, and no other prior art of record teaches such features, a rejection of the claims under §103(a) fails as a matter of law.

This pre-appeal brief includes: (a) a brief description of the invention, and (b) a detailed summary of the Horr reference including diagrams of how the Horr positioning tools work as vertically moveable lift pins and are thus not radially (or collectively) moveable.

A. Wafer-Positioning Apparatus of the Present Invention – Radial *and* Collective *Movement*

FIGs. 3, 8A, and 4 below show the wafer positioning tool. The goal is to hold a wafer flat on the surface of plate 120 for even heating. The positioning tool includes a plurality of guide blocks 300 disposed around the edge of plate 120. The multiple guide blocks 300 are

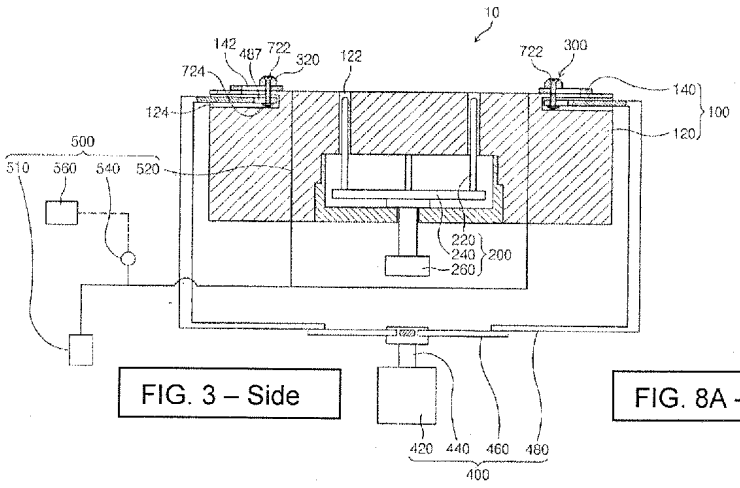


FIG. 3 – Side

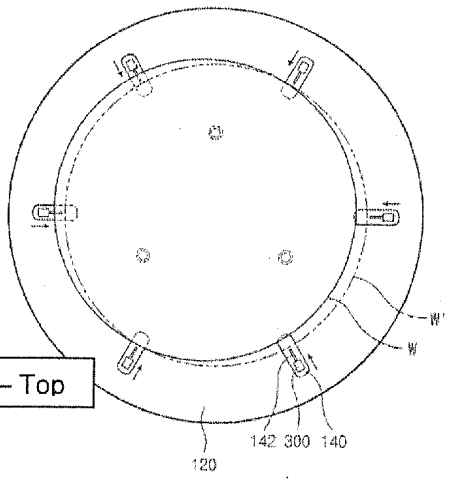


FIG. 8A – Top

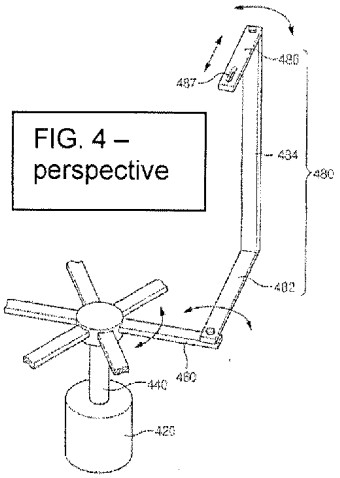


FIG. 4 – perspective

moveable in a radial direction (e.g. inward as shown by the arrows in FIG. 8A). The multiple guide blocks 300 are also moveable collectively (e.g. coupled together, using the assembly in FIG. 4). When a wafer is placed in a misaligned position, as shown in the middle figure by solid line W, the guide blocks 300 are moved radially and collectively to push the wafer in toward a centered retaining position as shown by broken line W'. Note the advantages of collective movement of the guide blocks within their slots 142—turning shaft 440 in one direction collectively moves all guide blocks within their slots radially toward the center, and turning shaft 440 in the opposite direction moves all guide blocks award from the center. This compares with the prior art where each guide block would need to be moved individually.

Independent claims 1 and 18 were amended in a previous response to cite that the guiding block transfer unit is adapted to *collectively* move the guiding blocks *radially* on the susceptor on which the substrate is positioned. No prior art of record teaches this feature:

- The ***Shin*** guide blocks are only vertically (not radially) moveable and only individually (not collectively) adjustable.
- The ***Morgan*** saw blade guide blocks move in a linear and parallel fashion, not "radially" or "collectively" as noted in claims 1 and 18.
- ***Cho*** does not move the bracket and wing nut structures collectively to adjust rollers 42. There is no suggestion of structure that would allow such brackets and wing nut

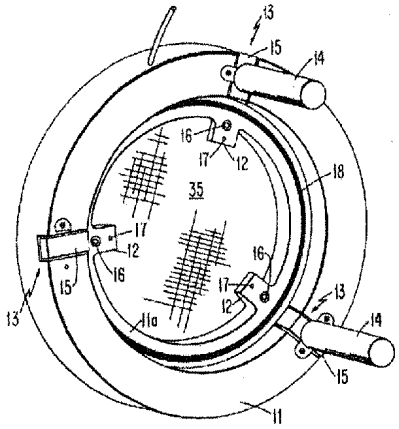
structures to be adjusted collectively as such nuts, one tightened down, are not prone to move.

- ***Perlov*** does not contain guide blocks that move "radially." In fact, the articulated arm of Perlov only acts to move the contact points in a parallel, linear manner against multiple wafers (see, e.g., structure of Perlov FIG. 1A).
- ***Horr*** does not include any component that moves "radially" but rather vertically. As the Examiner has specifically cited Horr as teaching such radial and collective movement, a further discussion is included below.

B. The Only Moving Parts Of Horr Move Vertically, And Not Radially Or Collectively

A portion of Horr FIG. 1 is shown to the right. The Examiner states the following:

> Horr teaches the collective and radial movement of the guiding block transfer unit in column 3, lines 1-13.



First, Horr does not teach a guiding block transfer unit. Instead, the only moving parts are lift pins 16, and those move vertically relative to a mounted wafer and not radially. The paragraph referred to above describes features of FIG. 1, including the three internally extending ears 12 spaced at equal 120° intervals within the cavity 35. These ears, although extending radially, are not moveable. The only moveable parts in the Horr device are the three lift pins 16 extending upward (see FIG. 3 on next page) out of the ears. Each lift pin 16 is actuated separately—not collectively—using associated driver translators 14. When a wafer is loaded within the cavity 35, pins extend upward out of the ears 12 to suspend the wafer at an even height. As there is no part of Horr that causes a radial movement (e.g. toward the center of the adaptor ring 11), there can be not teaching within Horr of collective and radial movement of the guiding block transfer unit.

Horr FIG. 3 is shown in the following page. The wafer 30 is shown attached to an underside of a wafer holder 23 via a vacuum pressure applied through channels 25 defined on the bottom of holder 23. Driver translators 14 and lift pins 16 surround the wafer holding assembly at 120° intervals. Detectors 40 associated with each pin 16 detect the relative attitude of the holder lugs 32 (and thus the attached wafer 30). If the lug 32 is too low, then the detector triggers actuation of the associated translator 14 to push down (e.g. vertically) on a horizontal

driver arm 15 which in turn moves the attached pin upward via pivot point 15a to thereby level that side of the holder/wafer.

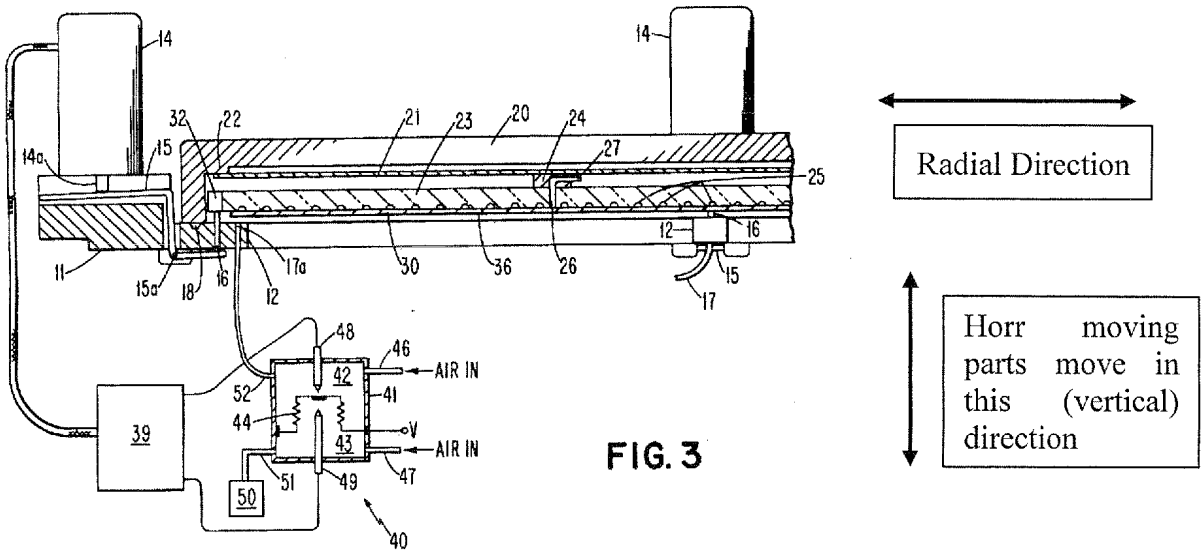
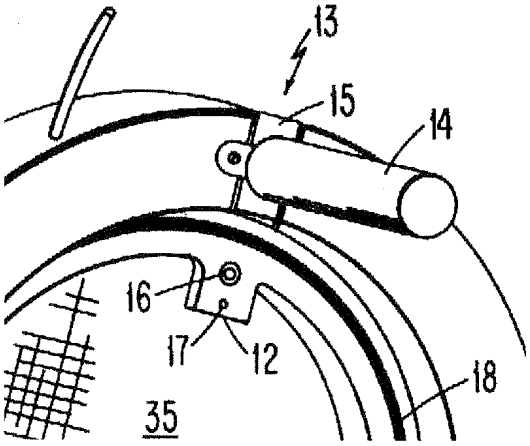
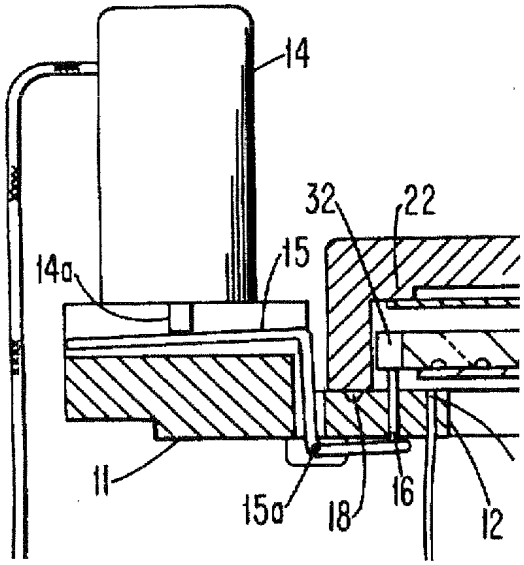


FIG. 3

Close-ups of the Horr features are shown below. The figure on the left below shows a portion of FIG. 1—a perspective view of the adaptor ring 11 that holds the wafer and chuck assembly. To repeat, the adaptor ring 11 includes three spaced ears 12 that extend radially into the interior of the ring 11 and these ears do not move (although a pin 16 extends vertically through the ear as described below). The figure on the right below shows a portion of FIG. 3—a sectional view side elevation view of the assembled wafer holder.





It is important to note that "radial" movement relative to the block assembly or wafer holder would necessarily be in the left/right direction relative to the figure above/right. The only moving parts in the Horr assemblies shown above, however, move up/down as follows:

a. Downward movement of the central shaft 14a of the driver translator 14.
b. Downward movement of driver arm 15.
c. Rotational movement about pivot 15a.
d. Upward movement of the driver pin 16.

Note that it would be impossible for driver pin to move in a left/right (e.g., radial) direction because it is slidingly received within a vertical channel. Accordingly, Horr does not exhibit radial movement of the guiding block transfer unit and would therefore not teach that aspect of the presently claimed invention. Furthermore, adjustment of movement of each driver pin 16 occurs independently as each driver is attached to an associated sensor. There is no evidence that cross-talk occurs between the sensors. Accordingly, Horr does not exhibit collective movement of the guiding block transfer unit and would therefore not teach that aspect of the presently claimed invention.

As Horr does not teach the limitations ascribed to it, and as no other prior art makes up for this deficiency, rejection of the claims under §103(a) in view of the cited prior art must be overturned.

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Respectfully submitted,

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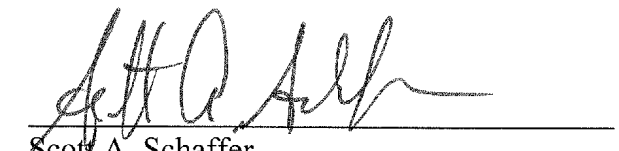

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